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DRAFT MEMORANDUM

To:	Philip Allen, RPM, USEPA	**Date:**	July 29, 2011
From:	David Keith; Anchor QEA, LLC	**Project:**	040284-01
	Jason Kase; Anchor QEA, LLC		
Cc:	Bob Piniewski, Project Navigator, Ltd.		
Re:	Request to Modify Composite Scheme for Patrick Bayou Tissue Samples		

PURPOSE

The purpose of this memorandum is to request a modification to the tissue compositing scheme for selected samples collected during the field sampling event conducted between June 14, 2011 and June 28, 2011, in support of the *Final Baseline Ecological Risk Assessment Work Plan – Attachment 1: Tissue Sampling and Analysis Plan* (SAP; Anchor QEA 2011). The SAP states that any modifications to the compositing scheme would be approved by the USEPA Project Manager prior to implementation.

BACKGROUND

During the field sampling program, individual fish and invertebrate samples were collected from one location at the same time. If an individual sample had a mass of 190 grams of tissue it was considered a complete sample because it met the minimum mass of tissue required for chemical analysis. In addition to the individual samples that met the minimum mass requirements, additional samples were created based on a compositing scheme outlined in the SAP. However, the total number of invertebrate "samples" at the end of the field sampling event did not meet the minimum sample number objectives provided in the SAP, based on the approved compositing scheme. A proposed alternative compositing scheme is provided below that allows us to meet the minimum total number of invertebrate samples identified in the SAP.

The SAP currently considers composited samples collected within a specific proximity limit to be from the same location, depending on the Prey Class (see Table 1 below). Samples

collected within these limits may be combined, as necessary, to achieve the minimum sample mass volume of 190 grams for the required chemical analysis; assuming the samples are of the same species and Prey Group.

Table 1
Sample Distance Limits for Composites

Prey Class	Maximum Allowable Distance between Samples for Compositing (m) [1]
Fish	
1A	30
2 (A,B)	300
Invertebrates	
1 (A,B,C)	30
2A	300

[1] – Best professional judgment.

For invertebrate Prey Classes, the numbers of samples were below the minimum targeted for each group (Table 2). To achieve the minimum sampling objective identified in the SAP for invertebrate Prey Class 1, a modification to the proximity limits for compositing purposes as is necessary.

Table 2
Number of Samples for Each Prey Group

Prey Class	SAP Target Range		Number of Samples Collected During Field Event	Proposed Additional Composites	Total Samples for Analysis
Fish					
1A	20	25	25	0	25
2 (A,B)	15	25	25	0	25
Invertebrates					
1 (A,B,C)	20	25	12	8	20
2A	15	25	13	0	13

PREY CLASS 1 MODIFIED PROXIMITY LIMITS

For Prey Class 1 Invertebrates, an increase in the proximity limit from 30 meters to 90 meters in areas of the Site downstream of the gunite channel would provide an additional seven samples. The individual sample locations used to create the seven composites for those downstream areas are shown in Exhibit 1 – Exhibit 7.

For Reach 4, which includes the gunite channel at the upstream boundary of the study area, there is insufficient mass of tissue of the Prey Class 1 invertebrate group to create a complete sample under the original or modified compositing scheme. Therefore, samples from locations approximately 400 meters apart in the gunite channel (Exhibit 8) would need to be composited to meet the tissue mass requirements for chemical analysis. We think it is important to have at least one representative sample of Prey Class 1 from Reach 4, and therefore request approval of the compositing scheme shown on Exhibit 8 for this Reach.

The proposed modifications would generate eight new samples resulting in a total sample count of 20 for this Prey Group; meeting the minimum goal for this group (Table 2). Although we did not meet our minimum sample number objectives for Prey Class 2A invertebrates (Table 2), increases in proximity limits for that class would not result in additional composite samples. Therefore, no requests for proximity limit modification for this group is requested, and the 13 samples we have for this Prey Class will be carried forward in the BERA.

AFFECT ON DATA QUALITY OBJECTIVES

No significant effect on the sampling DQO's is expected from this modification. The proximity limits were based on best professional judgment considering the potential foraging range of species within this size class. All additional composite samples based on the modified proximity limits are juvenile blue crab (*Callinectes sapidus*) which could reasonably be expected to have similar exposure over this range of distances (30 to 90 meters). Nonetheless, any differences in exposure among individuals in the composite, which are expected to be minimal, would be more than offset by the increase in statistical power resulting from increasing the total number of samples from 12 to 20.

SCHEDULE

All samples are currently being maintained at -20 Celsius at Alpha Analytical. Upon final approval of the modified proximity limits, a revised chain-of-custody and letter request will be submitted to Alpha Analytical to create and analyze the additional composites listed in Attachment 1.

ATTACHMENT 1

Exhibit 1

Composite Sample ID: PB01-I-A-BCR-W-001-COMP-20110620

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
PB002	1	PB01-I-A-BCR-W-019-20110620	BCR	A	02	44	202.7	1B	43	52	47
PB002	1	PB01-I-A-BCR-W-026-20110621	BCR	A	02	99.8		1B			
PB001.2	1	PB01-I-A-BCR-W-053-20110624	BCR	A	02	5.3		1B			
PB001.3	1	PB01-I-A-BCR-W-058-20110625	BCR	A	02	24.2		1B			
PB001.2	1	PB01-I-A-BCR-W-068-20110625	BCR	A	02	11.6		1B			
PB001.3	1	PB01-I-A-BCR-W-086-20110627	BCR	A	02	17.8		1B			

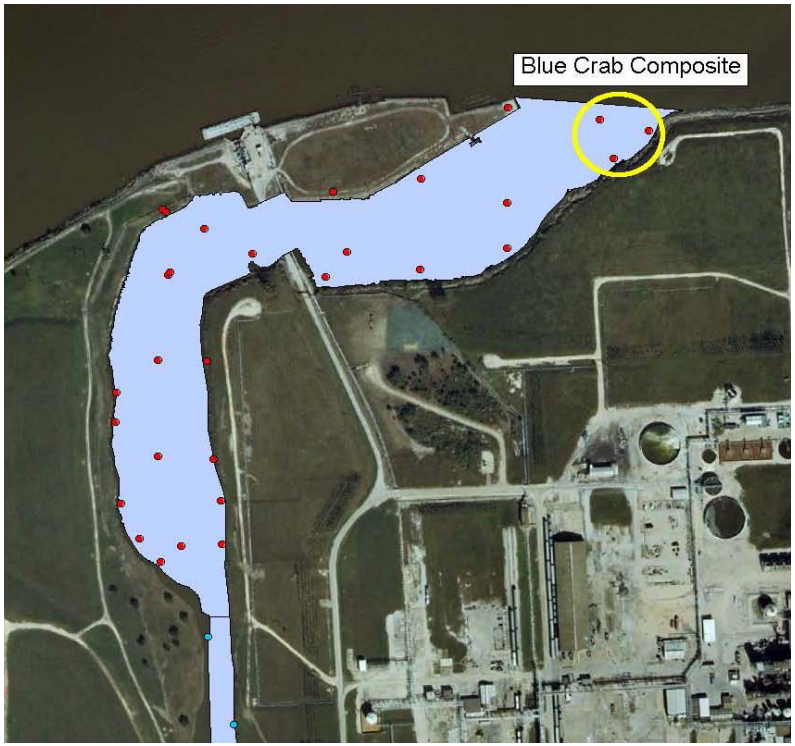

Exhibit 2

Composite Sample ID: PB01-I-A-BCR-W-002-COMP-20110620

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
PB005	1	PB01-I-A-BCR-W-018-20110620	BCR	A	02	37.9	178.6	1B	45	45	45
PB005	1	PB01-I-A-BCR-W-023-20110621	BCR	A	02	22.2		1B			
PB005	1	PB01-I-A-BCR-W-025-20110621	BCR	A	02	43.2		1B			
PB005	1	PB01-I-A-BCR-W-034-20110622	BCR	A	02	43.9		1B			
PB004	1	PB01-I-A-BCR-W-039-20110623	BCR	A	02	8.1		1B			
PB004	1	PB01-I-A-BCR-W-049-20110624	BCR	A	02	23.3		1B			

Exhibit 3

Composite Sample ID: PB01-I-A-BCR-W-003-COMP-20110619

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
999	1	PB01-I-A-BCR-W-015-20110619	BCR	A	02	73.2	196	1B	35	88	62
PB009	1	PB01-I-A-BCR-W-044-20110624	BCR	A	02	10.3		1B			
PB011	1	PB01-I-A-BCR-W-047-20110624	BCR	A	02	24.2		1B			
PB009	1	PB01-I-A-BCR-W-063-20110625	BCR	A	02	23.2		1B			
PB011	1	PB01-I-A-BCR-W-066-20110625	BCR	A	02	27.5		1B			
PB011	1	PB01-I-A-BCR-W-073-20110626	BCR	A	02	23.9		1B			
PB011	1	PB01-I-A-BCR-W-088-20110627	BCR	A	02	13.7		1B			

Exhibit 4

Composite Sample ID: PB01-I-A-BCR-W-004-COMP-20110616

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
PB015	1	PB01-I-A-BCR-W-004-20110616	BCR	A	02	24.7	223.4	1B	5	64	43
PB015	1	PB01-I-A-BCR-W-006-20110617	BCR	A	02	12.2		1B			
PB015	1	PB01-I-A-BCR-W-007-20110617	BCR	A	02	10.4		1B			
PB015	1	PB01-I-A-BCR-W-009-20110618	BCR	A	02	21.9		1B			
PB016	1	PB01-I-A-BCR-W-060-20110625	BCR	A	02	25.6		1B			
PB015	1	PB01-I-A-BCR-W-061-20110625	BCR	A	02	27.2		1B			
PB016	1	PB01-I-A-BCR-W-070-20110626	BCR	A	02	41.6		1B			
PB015	1	PB01-I-A-BCR-W-074-20110626	BCR	A	02	20.7		1B			
PB016	1	PB01-I-A-BCR-W-084-20110627	BCR	A	02	39.1		1B			

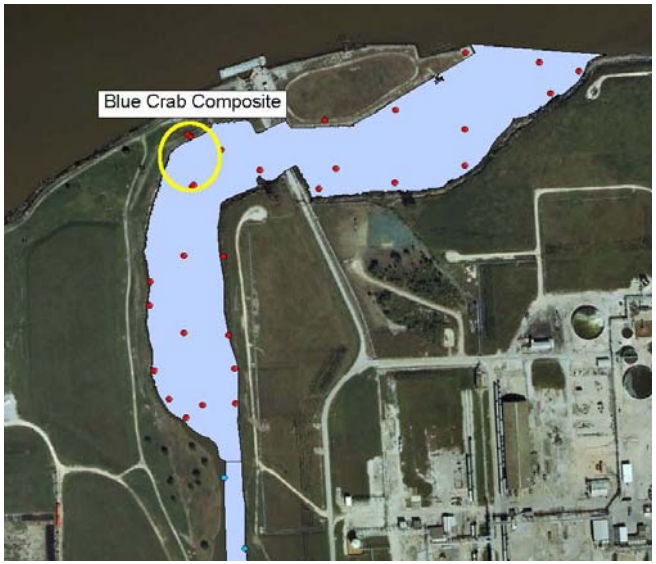

Exhibit 5

Composite Sample ID: PB01-I-A-BCR-W-005-COMP-20110620

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
PB024	1	PB01-I-A-BCR-W-021-20110620	BCR	A	02	13.1	192.3	1B	41	61	48
999	1	PB01-I-A-BCR-W-035-20110622	BCR	A	02	24.4		1B			
PB026	1	PB01-I-A-BCR-W-037-20110623	BCR	A	02	35.9		1B			
PB026	1	PB01-I-A-BCR-W-048-20110624	BCR	A	02	13.2		1B			
PB026	1	PB01-I-A-BCR-W-079-20110626	BCR	A	02	46.9		1B			
PB026	1	PB01-I-A-BCR-W-082-20110627	BCR	A	02	58.8		1B			

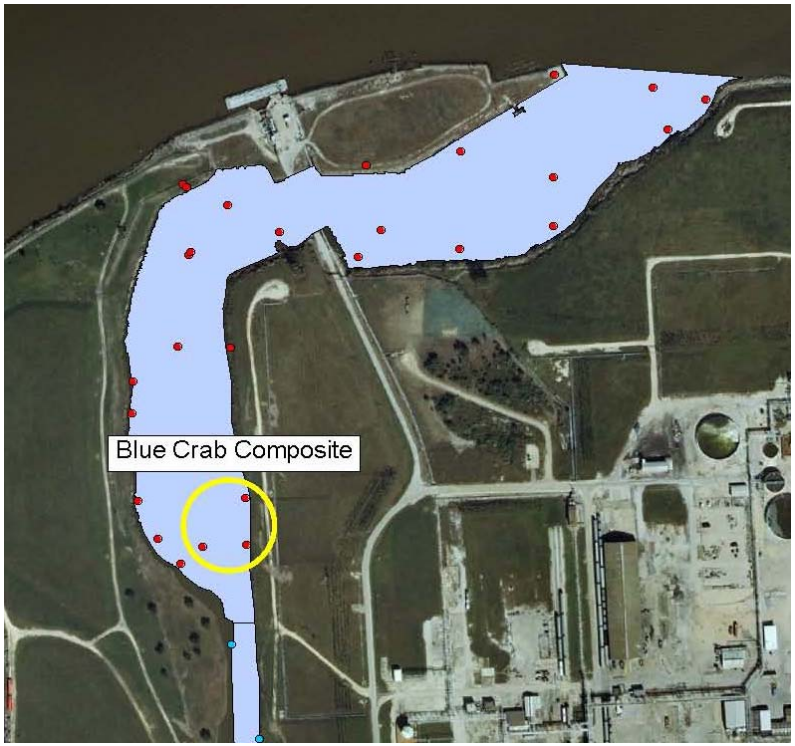

Exhibit 6

Composite Sample ID: PB02-I-A-BCR-W-001-COMP-20110619

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
PB047.2	2	PB02-I-A-BCR-W-020-20110619	BCR	A	02	9.9	195.8	1B	23	62	57
PB047.2	2	PB02-I-A-BCR-W-022-20110620	BCR	A	02	46.7		1B			
PB047.2	2	PB02-I-A-BCR-W-024-20110621	BCR	A	02	50.5		1B			
PB048	2	PB02-I-A-BCR-W-035-20110624	BCR	A	02	22.2		1B			
PB048	2	PB02-I-A-BCR-W-040-20110625	BCR	A	02	10.1		1B			
PB048	2	PB02-I-A-BCR-W-042-20110626	BCR	A	02	11.7		1B			
999	2	PB02-I-A-BCR-W-045-20110626	BCR	A	02	32.6		1B			
PB048	2	PB02-I-A-BCR-W-048-20110627	BCR	A	02	8.7		1B			
999	2	PB02-I-A-BCR-W-049-20110627	BCR	A	02	3.4		1B			

Exhibit 7

Composite Sample ID: PB02-I-A-BCR-W-002-COMP-20110616

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
PB037	2	PB02-I-A-BCR-W-001-20110616	BCR	A	02	18.5	201	1B	82.5	82.5	82.5
PB037	2	PB02-I-A-BCR-W-002-20110616	BCR	A	02	11.8		1B			
PB037	2	PB02-I-A-BCR-W-004-20110617	BCR	A	02	13.6		1B			
PB037	2	PB02-I-A-BCR-W-005-20110617	BCR	A	02	9.4		1B			
PB037	2	PB02-I-A-BCR-W-016-20110618	BCR	A	02	30		1B			
PB041	2	PB02-I-A-BCR-W-032-20110624	BCR	A	02	56		1B			
PB041	2	PB02-I-A-BCR-W-037-20110625	BCR	A	02	33.8		1B			
PB041	2	PB02-I-A-BCR-W-043-20110626	BCR	A	02	27.9		1B			

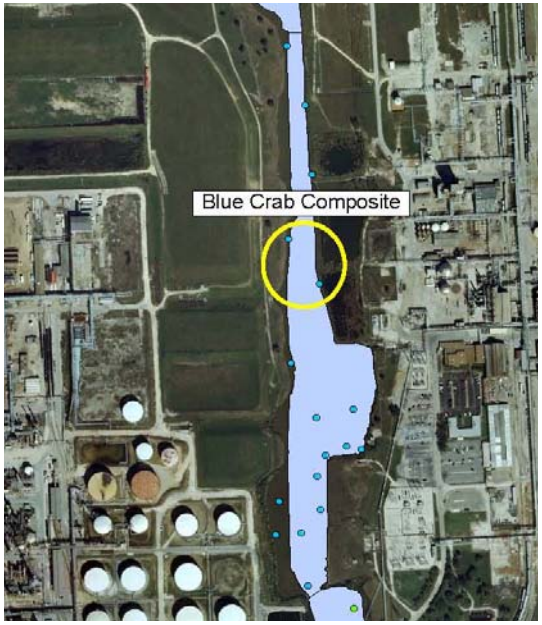

Exhibit 8

Composite Sample ID: PB04-I-A-BCR-W-001-COMP-20110629

Station ID	Reach	Sample ID	Species	Size Class	Migration Code	Weight (g)	Total Weight (g)	Group	Minimum Distance Between Samples (m)	Maximum Distance Between Samples (m)	Average Distance Between Samples (m)
999	4	PB04-I-A-BCR-W-001-20110629	BCR	A	02	35.2	154.7	1B	63	410	274
PB081	4	PB04-I-A-BCR-W-002-20110629	BCR	A	02	35.1		1B			
PB081	4	PB04-I-A-BCR-W-003-20110629	BCR	A	02	59.6		1B			
999	4	PB04-I-A-BCR-W-004-20110629	BCR	A	02	24.8		1B